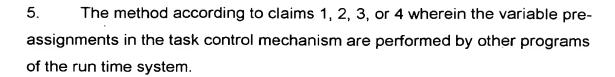


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- 1. A method for debugging programs for industrial controllers, in particular motion controllers, where a user links graphical elements, in particular control structures and function blocks, to form a motion control flowchart that can be visualized on a display device by using an editor, comprising the following process steps:
 - a) The user prepares a debugging process based on the flowchart,
 - b) The user assigns a suspend command to each graphical element,
- 10 c) The debugging process starts,
 - d) The program sequence continues until a suspend command is reached,
 - e) The location of the current element in the flowchart is visualized for the user,
 - f) The user proceeds to the next possible suspend command,
- g) Steps d) through f) are continued until the user reaches the end of the flowchart.
 - 2. The method according to claim 1, wherein a task belonging to a graphical element, that has been stopped by a suspend command is continued with a task control mechanism of the run time system.
- 20 3. The method according to claim 1 or 2, wherein the user operates a resume command by the task control mechanism of the run time system in the engineering system, thereby advancing the current suspend command.
- The method according to claims 1, 2 or 3, wherein the task control mechanism of the run time system is used by means of variables in the form of breakpoint debugging which can be pre-assigned by the user in the engineering system.

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- 5 6. The method according claim 1, comprising the following successive steps:
 - a) A structured textual language is generated from the flowchart.
 - b) The structured textual language is converted in a processor-independent pseudo-code.
- 10 c) The processor- independent pseudo-code is loaded into the controller.
 - d) The processor- independent pseudo-code is converted into executable processor code.
 - 7. The method according to claim 1, comprising that a debugging interface is available to the user at the level of the structured textual language and/or at the level of the pseudo-code and/or at the level of the processor code.
 - 8. A method according to claim 1, comprising that adequate programming language commands are available to the user in the flowchart editor, depending on the basic machine design and/or hardware configuration.
- 9. The method according to claim 1, wherein additional graphical elements are automatically generated in motion control flowchart representation from user-defined structured text subprograms of the textual language by means of a converter, or compiler, in the manner of a compiler Said graphical elements contain the function interface of the corresponding structured text subprograms and are also made available to the user.
 - 10. The method according to claim 1, wherein the automatically generated graphical elements are used by the user as language elements of the motion control flowchart.

- 11. The method according to claim 1, wherein structured text according to IEC 6-1131 is used as the structured textual language.
- The method to claim 11, wherein a user can change as desired
 between structured textual language, contact plan and/or function plan as forms of representation for formulation conditions.
 - 13. The method according to claim 1, wherein at least one loop and/or at least one parallel branch is present as language elements in the motion control flowchart view.
- 10 14. The method according to claim 13, wherein the individual commands are initiated in the same interpolator cycle within the respective parallel branch.
 - 15. The method according claim 1, wherein the parameters can be set for function blocks by mask input in the motion control flowchart view.
- 15 16. The method according to claim 1, wherein function blocks are combined into modules which in turn appear as function blocks in the motion control flowchart view.
 - 17. The method according to claim 16, wherein modules are interleaved in the motion control flowchart view.
- 20 18. The method according to claim 1, wherein multiple instructions are possible for the user in the function blocks for the allocation of variables in the motion control flowchart view.
 - 19. The method according to claim 1, wherein the function blocks representing functions that claim a period of time contain advance conditions in the flowchart view.
 - 20. The method according to claim 1, wherein the graphical elements of the flowchart are positioned automatically.

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- 21. The method according to claim 1, wherein the graphical elements of the flowchart are linked together automatically.
- 22. The method according to claim 1, wherein the flowchart is displayed in reduced or enlarged form in the display.
- 23. The method according to claim 1, wherein re-translation back into motion control flowchart representation is possible by means of marks in the textual language.
- 24. The method according to claim 1, wherein steps a) through c) are triggered in a collective step.
 - 25. The method according to claim 1, comprising that the current graphical element is visualized on the display device during processing of the flowchart program.